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ABSTRACT

This topical review addresses performance goals and indicators for special education, including how to create valid and measurable indicators of key features of special education that can be used to gauge effectiveness as well as target improvement strategies. A section identifying highlights of the review notes that an indicator system consists of four elements: context, input, process, and outcome-results. Following a brief introduction, the review is organized into six sections. Section 1 reviews current accountability strategies and the features of an educational accountability system. Section 2 contains an overview of educational indicators and their use in accountability systems. Section 3 presents examples of specific indicator systems that are currently required in general education. Section 4 discusses special education data currently being collected under new federal education accountability systems. Section 5 is a summary and analysis of key issues to be considered in developing performance goals and a special education indicator system. Section 6 offers practical steps for creating a special education indicator system. Throughout the review, examples are offered from the four states (California, Maryland, New York, and Texas) participating in the investigation of accountability in special education. (Contains 53 references.) (DB)

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TOPICAL REVIEW ONE

Creating Performance Goals and Indicators in Special Education

January, 2002

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Creating Performance Goals and Indicators in Special Education

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The demand for accountability is among the most visible and controversial of U.S. educational reforms. The Federal government, states, and local districts increasingly use educational data to gauge the productivity of school systems and to hold schools, districts, teachers, and students responsible for their performances and for meeting goals.

Indicator Systems as an Element of Accountability

Indicator systems are a key element of accountability, although they are not the whole accountability system. Indicators provide information, which can range from student-level outcomes such as academic achievement, to school-level input such as teacher quality and class size. In an effective accountability system, the information that indicators offer is used to monitor the "health" of the education system, reported to appropriate agencies and the public, and acted upon. Among the indicators that states use most frequently are assessment scores, dropout rates, student attendance, and expenditures.

An indicator system's framework consists of four elements:

- *Context - the situation in which learning occurs, including school demographics and student-teacher interaction;*
- *Input - human and fiscal resources, including personnel and facilities;*
- *Process - school actions and materials that mediate between inputs and outcomes, including school operations and curriculum quality; and*
- *Outcome - results, including student achievement and graduation rates.*

Some education models try to determine the optimal proportion of inputs required to yield maximum outcomes: the "education production function." However, it's important to know that indicator systems are fluid; one indicator may be labeled an "input" in one circumstance and a "process" or "outcome" in another.

Examples of Federal Accountability Systems Requiring Indicators

Two pieces of federal legislation requiring the use of indicators for enhanced accountability are the Government Performance Results Act (GPRA) and Title I of the Improving America's Schools Act. GRPA holds federal agencies accountable for producing results, and links plans and outcomes with budgets. Within the Department of Education, the Office of Special Education Programs (OSEP) has developed GPRA goals and indicators.

Title I requires states to create - for all students - challenging content and standards aligned with assessment and accountability systems. A state must show that it has met specific requirements and has demonstrated adequate yearly progress (AYP) or be subject to corrective actions. However, Title I requirements are interpreted in different ways by states; for example, states translate "assessments" to fit their own needs or existing systems (Goertz & Duffy, 2000). In addition, 20 states have not met the Title I requirement to include students with disabilities or IEP students in their assessment and accountability systems (U.S. Department of Education, 2001).

Special Education Accountability and Indicators

Within special education, several efforts have been designed to provide OSEP with information on how relevant state agencies are complying with the 1997 amendments to IDEA. These efforts, which are performance-based, include the Continuous Improvement Monitoring Process (CIMP) and Focused Monitoring.

IDEA requires that states establish performance goals and indicators for students with disabilities and report them to the public biennially. A review of those reports has found significant variations across states. For example, what one state called an indicator, another identified as a goal; some states had separate goals for students with disabilities and students in general education (Ahearn, 2001).

Issues in Creating Special Education Indicators

An indicator system used to establish and monitor progress toward performance goals can be a powerful and controversial tool. To create an indicator system, policy-makers must first identify the areas needing improvement, then create benchmarks, or target performance levels (which can be either absolute standards or rates of progress). They should collect data on the present dimensions of the problems being addressed and set goals that represent meaningful change in the direction of the benchmarks.

The next step is to select key indicators that are accurate, efficient, timely, and valid. Since data is generally "reported up" from one level (student, school, district, state, or federal) to the next, policy-makers should create a system with vertical alignment, meaning that the data collected has use and significance at higher levels. Once policy-makers have chosen indicators, they need to monitor progress continuously. That way, they can evaluate targeted performance and intervene immediately to improve progress toward goals.

Creating an effective, multi-use indicator system for special education presents challenges. However, the benefits of efficient and aligned data collection are clear in a climate calling for enhanced, performance-based accountability.

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1. Introduction

This topical review addresses performance goals and indicators for special education. It is part of a series developed by the Educational Policy Reform Research Institute (EPRRI), which is investigating issues related to accountability and special education. This review looks at an area of increasing concern to special educators: how to create valid and measurable indicators of key features of special education that can be used to gauge effectiveness as well as target improvement strategies.

The 1997 amendments to the Individuals with Disabilities Education Act (IDEA) requires states to set performance goals for children with disabilities that, to the extent appropriate, are consistent with goals for all children, and to establish indicators that can assess progress toward those goals. At a minimum, the goals must address performance on assessments, drop out rates, and graduation rates. This new requirement, coupled with additional changes in IDEA and other key federal legislation, such as Title 1 of the Elementary and Secondary Education Act, signal the national shift to performance-based accountability and the use of data-driven decision making.

This review is organized in six sections. Section I presents a brief review of current accountability strategies and the features of an educational accountability system; Section II contains an overview of educational indicators and their use in accountability systems. Section III presents examples of specific indicator systems that are currently required in general education. Section IV discusses special education data currently being collected. Section V is a summary and analysis of key issues to be considered in developing performance goals and a special education indicator system. Section VI offers practical steps for creating a special education indicator system.

Throughout this review we use examples from four states: California, Maryland, New York, and Texas. These are the core study states participating with EPRRI in the investigation of accountability in special education. The examples are not considered representative of all states but are illustrative of specific types of reports and data being collected.

2. An Overview of Accountability

The use of educational data to indicate the productivity of school systems is a key feature of accountability strategies. Ever since the seminal report, *A Nation at Risk* (from the National Commission on Excellence in Education, 1983), compared the performance of U.S. students with that of students in other educational systems around the world, many politicians, policy-makers, corporate leaders, and academicians have expressed concern that American public education is not productive.

Productive school systems use resources effectively to generate more positive outcomes; students leave schools well prepared with skills that allow them to compete in the labor market or pursue higher education. Students become internationally competitive on a global level at least in terms of performance on international assessments. The demand for more productive schools has brought about the current push for greater educational accountability.

The demand for school and school district accountability is among the most visible and controversial of U.S. educational reforms. Current educational accountability systems put most emphasis on student performance (Fuhrman, 1999; Heubert & Hauser, 1999; Thurlow, Nelson, Teelucksingh, &Ysseldyke, 2000) and direct consequences to systems and students (Heubert & Hauser, 1999).

Creating Data-driven Accountability Systems

An accountability system is a set of mechanisms that provides information to the public. It is based on the notion that public education is a rational system involving inputs and outcomes. The inputs (e.g., teachers, students, and facilities) have certain characteristics, qualifications, socio-economic status, and resources (e.g., funds) (Shavelson, McDonnell, & Oakes, 1989). The outcomes include academic achievement, graduation rates, and other student performance data. In order to adjust inputs, schools must have data on intended outcomes. In addition, educational accountability depends on assigning responsibility for clearly defined or measured outcomes.

Accountability systems may serve a number of purposes. They can be used to: (1) diagnose a problem within a certain set of educational practices; (2) correct a set of morally wrong, economically inefficient, or ineffective practices; (3) generate a set of incentives that motivate professionals and students to achieve their best; (4) provide information to the public at large, in keeping with a democratic tradition of openness; (5) provide a standard to compare schools' productivity and performance; and (6) ensure consequences for the actions of schools and teachers. Darling-Hammond (1989) states that accountability also "encompasses how a school or school system hires, evaluates, and supports its staff; how it relates to students and parents; how it manages its daily affairs; how it makes decisions; how it ensures that the best available knowledge will be acquired and used; how it evaluates its own functioning, as well as students' progress; how it tackles problems; and how it provides incentives for continual improvement" (p. 20).

Levels of Accountability

There are three levels of accountability in educational systems, each having implications for the types of data that are required: (1) school and district accountability, (2) professional or teacher accountability, and (3) student accountability.

A. School and District Accountability

Traditionally, LEAs have been responsible for implementing state and federal directives. New accountability systems focus on individual schools, and require that school-level data, most notably on student achievement, be collected and reported. These data are frequently used to impose consequences on schools (Fuhrman, 1999; Linn, 2000; Olson, Bond, & Andrews, 1999).

Student performance indicators are the most visible part of school-level accountability (Olson et al., 1999; Linn 2000). These indicators typically include student achievement on state and local assessments, attendance, graduation, and in some instances, post-secondary status (Linn, 2000; Thurlow et al., 2000). Despite the emphasis on student assessment results, neither states nor local districts have completely eliminated other data from their accountability systems. For example, some states (Kansas, Michigan, Rhode Island) are using school and district inspections of teaching processes to both accredit schools and assist them in improving student performance (Fuhrman, 1999; Goertz & Friedman, 1996).

B. Teacher Accountability

The concept of holding individual teachers directly respon-

sible for student performance remains controversial. While most states require school districts to evaluate teachers on a regular basis, teacher compensation, tenure and licensure typically are not tied to student achievement. A few states (e.g., Texas) are taking steps to include student performance in the evaluation of teachers. Some states use school-based accountability as a way of rewarding (Kentucky) or punishing (Texas) teachers for students' performance (Thurlow et al., 2000). Fuhrman (1999) asserts that even when there is no direct teacher accountability, teachers are motivated by the monetary bonuses a school may receive and also by the desire to avoid sanctions.

C. Student Accountability

When students are held accountable, typically they are at the high school level, and accountability is based on the courses they take, rather than on their performance on assessments (Heubert & Hauser, 1999). All but four states prescribe a minimum number of courses high school students must take in specific academic areas (Guy, Shin, Young, & Thurlow, 1999). In 1998, most states required four years of English, three years of social studies, and two years each of mathematics and science to receive a high school diploma. States, however, generally do not specify exactly which courses (e.g., algebra, geometry, chemistry) students must take to meet their credit requirements (Guy et al., 1999). Twelve states award an advanced or honors diploma to students who complete additional or advanced courses.

Increasingly, many states assess what their students have learned by the time they reach the 11th or 12th grade. The Council of Chief State School Officers' national survey indicated that 18 states required students to pass a proficiency test to receive a high school diploma (Olson, 1999). More and more, assessment tests focus on standards for 10th grade or higher (American Federation of Teachers, 1999) as states revise existing high school assessments or develop new ones to measure more rigorous content (Fuhrman, 1999). See "Exit Documents for Students with Disabilities: An Overview of Historical and Legal Issues" www.eppri.org.

Tests are also increasingly used as requirements for promotion from one grade to the next (Heubert & Hauser, 1999). Proponents of increased test-based accountability believe that high educational performance is not possible without challenging and explicit standards attached to rewards. Nonetheless, test-based accountability is controversial, as parents and the general publicquestion issues of test validity, costs, focus, and teaching to the tests.

3. An Overview of Education Indicators and Indicator Systems

The creation of appropriate indicator systems is a key part of an educational accountability system. Indicator systems provide a variety of information to government officials, school administrators, school officials, principals, teachers, parents, and the public at large. Indicators may include student-level outcomes (e.g., academic achievement) or they may focus on school-level inputs (e.g., teacher quality, learning processes, class size, teacher-pupil ratio, textbooks). Schools and school districts are currently judged against a multitude of indicators. In 1999, the indicators most frequently used by states were assessment scores (41 states); dropout rates (33 states); student attendance (29 states); expenditures and the use of resources (27 states); graduation rates (18 states); student behavior, discipline, truancy, expulsion and/or suspension (18 states); and transition to post-secondary education or employment after high school (16 states) (Education Commission of the State, 1999).

However, Darling-Hammond (1989) cautions that despite what many people think, indicators are not the accountability system. Indicator systems only provide information. In order for that information to translate into an accountability framework, several other factors have to be present, mainly a set of policies regarding how the indicators will be reported and used, and sufficient capacity to act upon the information.

The Uses of Education Indicators

An education indicator is an individual or composite statistic that relates to a basic construct in education and is useful in a policy context. The overriding purpose of indicators is to characterize the nature of a system through its components—how they are related and how they change over time. This information can then be used to judge progress toward some goal or standard, against some past benchmark, or by comparison with data from some other institution or country (Shavelson & Oakes, 1991, p. 1).

Goedegeburre and Overgaag (1991) identify four main uses of indicators.

(1) *Preparation for choice and action* - When new programs or activities are contemplated, indicators can be useful in understanding the context in which those programs will be implemented. They can provide a known base for planning implementation, some indication of the resources already in place, and a framework for estimating needed resources.

(2) *Evaluation of choice and action* - Once new policies have been implemented, it is important to collect data to determine whether the system is responding as expected and to see where there are any unintended consequences. Conversely, indicators can signal the need for new policies to change undesirable trends.

(3) *Routinization of choice and action* - Some indicators can play a role in the regular distribution of resources (funding, the distribution of teachers to schools, etc.).

(4) *Assembling a comprehensive knowledge base* - An indicator system can provide a whole picture rather than a piecemeal assessment, and can signal a problem in certain areas of the educational system. The use of educational indicators in this context is still evolving.

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Goertz (1989) states that, "Education Indicator systems provide information not only on the distinct components of the educational system, but also about how the relevant components work together to affect educational outcomes" (p. 4).

A single indicator by itself cannot tell the story of what goes on within an educational system. Porter (1991) cautions that:

Unfortunately, an indicator system designed today is likely to place an inappropriate focus on today's issues. Just as such a system would be judged as inadequate against the concerns of 10 years ago, that same system may well miss the issues of greatest interest 10 years from now. . . . . A snapshot of school practice is not sufficient; assessments of change are needed. (p.14).

Oakes (1986) agrees stating, "Indicators must have the potential to identify new problems as well as to address old questions" (p. 3).

The Framework of Indicator Systems

A general framework for indicator systems involves four domains of data or information: Context ‡ Input‡ Process‡ Outcome

A. Context

Context is the situation in which learning occurs. There are four levels of context that need to be considered in any indicator framework: *The learners*: their cognitive states and abilities; *The classroom*: student-teacher interactions; scheduling of classes; time spent on instruction; level of technology within the classroom; *The school:* the demographics of students at the school; how the school differs from others within the same geographic region; how it compares to schools across the nation; the goals of particular schools; *The community*: community characteristics such as socioeconomic status, the amount of social capital available within the community (extended community networks); and parental education within the community. Some contextual factors may also be considered as inputs.

B. Inputs and Outcomes

The concept of educational inputs defined as human and fiscal resources and outcomes such as student achievement and performance reflects some of the earliest educational accountability indicators.

Examples of Educational Inputs

- Personnel: teachers, administrators, clerical and technical workers.
- Qualifications of Personnel : certification, education, years of experience, subject area training.
- Infrastructure: facilities, buildings, labs, media, technology, operating systems, transportation, books, supplies.
- Community Resources: partnerships, parental education, parental involvement, social capital, cultural capital, human capital.
- Financial Resources: money.
- Student Characteristics: students' prior academic achievement, effort they put into learning, time spent doing homework, peer influence.

Examples of Educational Outcomes

- Academic achievement.
- Cognitive higher order learning.
- Aspirations for higher educational attainment.
- Participation in academic ventures.
- Graduation rates.
- Dropout rates.
- Labor market earnings.
- College attendance.

Some educational researchers have attempted to simulate or model the educational process following models developed in the disciplines of economics and business. These models attempt to determine the optimal proportion of inputs required to yield maximum outcomes. This is referred to as the "Education Production Function."

Researchers have tried to isolate the effect of each one of the inputs on the desired outcome, but the body of literature remains conflicted as to which inputs make a significant impact on outcomes.

The primary limitation of the education production function is that it only views simple input-outcome relationships. It does not simultaneously take into account the processes that occur within a school or the context within which the inputs are situated, nor does it account for how the input gets transformed into the outcome.

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Modeling the Education Production Function

Researchers have attempted to model real life phenomena to understand how various educational variables affect each other. By isolating variables that have a substantial impact, the model can yield important information for policy discussions or resource allocation.

The basic form of the Education Production Function Model as defined by Taylor (1998) is:

$$Yt = f(A(t^*), I(t\text{-}t^*), F(t\text{-}t^*), P(t\text{-}t^*), S(t\text{-}t^*), C(t\text{-}t^*), M(t\text{-}t^*))$$

The educational outcome of interest Y(t) measured at time t. This outcome is a function of all of the following inputs:

- $A(t^*)$ is the student's prior achievement,
- $I(t\text{-}t^*)$ is the difference in the student's effort between time t and t^*,
- $F(t\text{-}t^*)$ is the influence of the student's family between time t and t^*,
- $P(t\text{-}t^*)$ is the influence of peers between time t and t^*,
- $S(t\text{-}t^*)$ is the influence of school between time t and t^*,
- $C(t\text{-}t^*)$ is the influence of community between time t and t^*, and
- $M(t\text{-}t^*)$ is the influence of financial resources between time t and t^*.

As the demand for accountability has risen, policy makers have tried to understand why some schools produce good results despite a low level of resources or inputs, while others produce lower results despite a high level of resources. There has been an increased recognition of the need to incorporate process indicators into the education production function (Oakes, 1986; Porter, 1991).

C. Process Indicators

School processes are those actions and materials which mediate the interaction between inputs and outcomes. There are two general categories of school processes:

- *Organizational characteristics* pertain to school quality, including the norms that the district sets for student achievement, teacher behavior, and school operations. Some of these organizational requirements are nested within state norms, which in turn are nested within national norms. Special education policy and procedures represent an example of nested organizational characteristics.
- *Instructional characteristics* include curriculum quality (content), teaching quality (pedagogy), time spent in instruction (block scheduling, etc.), political processes within the school, principal-teacher relations, and student-teacher relations.

"Opportunity to learn" (OTL), which is another process indicator, means different things to different people. The concept has evolved since education policy makers first introduced it in the 1960s to describe aspects of the education process. McDonnell (1995) states that the concept of OTL was developed to determine whether cross-national differences in students' mathematics achievement were caused by differences in students' learning experiences rather than by their ability to master the subject. Subsequently, according to Guiton and Oakes (1995), as the positive impact of well-designed OTL strategies became clearer, they were used to demonstrate how educational resources are an equity issue. The construct and measurement of OTL have different interpretations; some have argued that education outcomes cannot be evaluated without considering whether a school has adequate resources and is deploying them effectively and equitably.

Porter (1991) cites three primary motivations for including school process indicators in the education production function:

- Descriptive motive: Schools provide educational opportunity; they do not directly produce student learning. Therefore, it is important to know about the nature of educational opportunity.
- Evaluation motive: Indicators of school processes can serve as evaluation instruments in monitoring school reform and a school's movement toward desired goals.
- Explanatory motive: Indicators of school processes can provide explanatory information when student outcome goals are not achieved, pointing to possible causes and solutions for inadequacies in school outcomes (p. 14).C.

The Challenges in Designing Indicator Systems

A continual challenge when designing educational indicator systems is defining indicators that are: ***valid***, meaning that they accurately measure the characteristic of interest; ***reliable***, meaning that they will yield the same values under comparable data collection measures; and ***informative***, meaning that the characteristic being measured is related to a specific outcome such as student performance.

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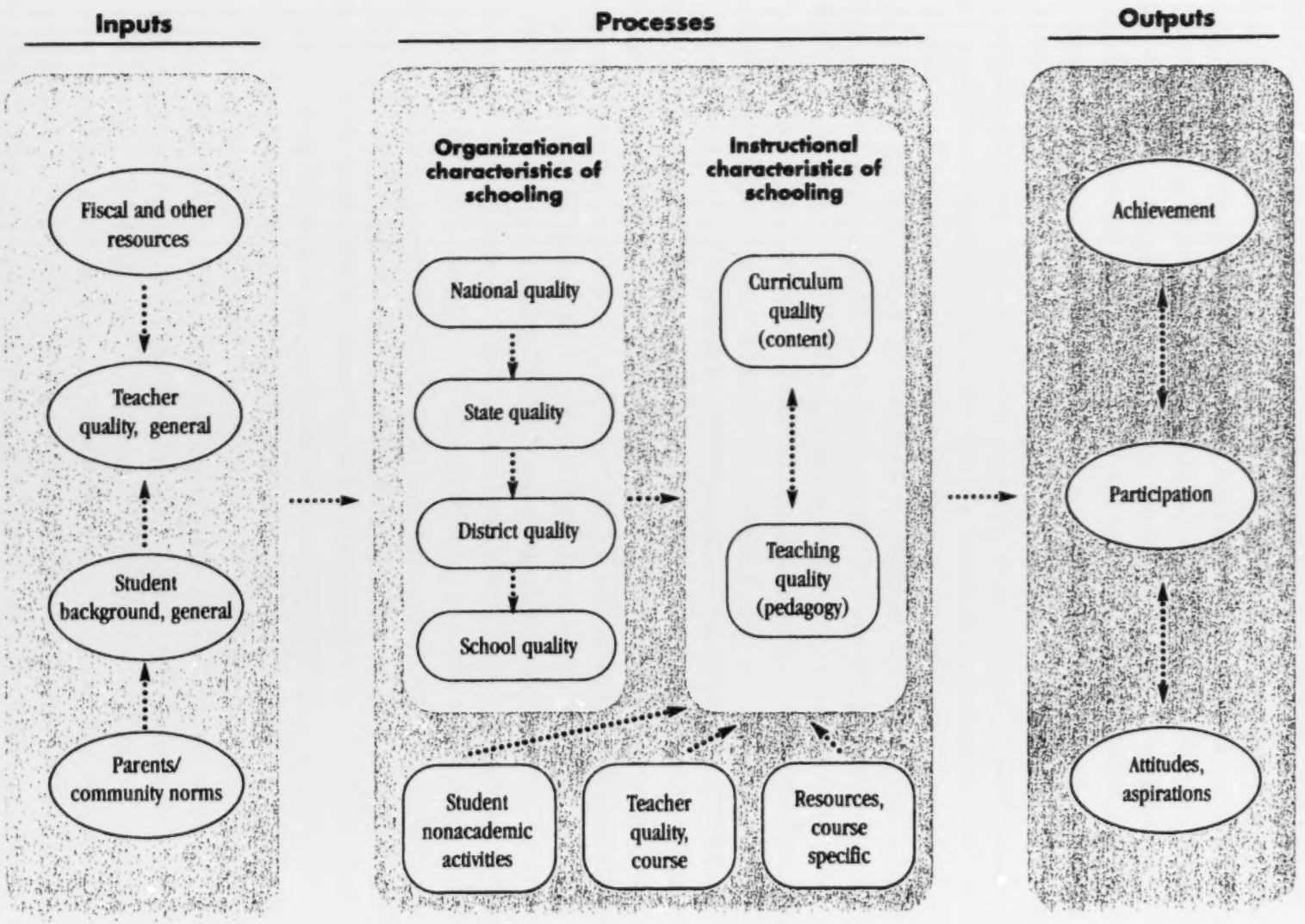

Figure 1. A Model of Education Inputs, Processes, and Outputs

Reprinted with permission from the American Educational Research Association Porter, A. (1991). Creating a System of School Process Indicators, Educational Evaluation and Policy Analysis, (13), 1, p. 15.

A recent review of educational indicators conducted by the National Center for Education Statistics (Mayer, Mullens, & Moore, 2000), identified 13 indicators of school quality that are considered to be related to student learning. The indicators are divided into the categories of school context, teachers, and classroom. However, of the 13 indicators, only teacher assignment, experience and academic skills, and class size were considered to be of high quality. These indicators are relatively straightforward *and* have been collected over some time, two factors which contribute to the accuracy of indicator data.

Indicators are powerful political tools and can rouse public opinion if misused. In addition, individual indicators are not separate entities that can always be categorized as input, process, or outcome. An outcome at one stage in the accountability process may comprise an input or even a process indicator at another stage in the process. Finally, appropriate cautions must be taken in reporting and interpreting indictors. For example, issues related to comparing indicators across entities versus through progress in individuals can have major repercussions. Often, a statistically insignificant difference in scores can result in a huge difference in ranks.

Summary

This overview of educational indicators provides some idea of the issues involved in creating such systems. It also provides a caution about selecting and using indicators for high stakes accountability. It is important to remember that the indicator systems do not constitute an entire accountability system in themselves. In order for indicator systems to translate into accountability measures, a comprehensive system of policies and responsibilities must be present. The link between indicator systems and accountability systems can be highly tenuous. On the one hand, indicator systems can signal trends and direct improvement efforts. On the other hand, if indicators are used solely for high-stakes decisions associated with sanctions, teachers may see them as an administrative tool and not a tool for school improvement.

4. Examples of New Federal Education Accountability Systems

Two pieces of federal legislation that require the use of specific indicators as part of enhanced accountability are the *Government Performance Results Act* and *Title I* of the *No Child Left Behind Act*. They are used here as examples of indicator systems that call for the collection and reporting of specific education data.

The Government Performance and Results Act of 1993 (GPRA)

GPRA (PL 103-62) was passed in 1993. The Act is an amendment to the Budget and Accounting Act of 1921, which established the Office of Management and Budgeting (OMB) and most of the procedures governing financial management of the federal government.

The GPRA requires a major culture change in how agencies plan their activities and set budget priorities (The Congressional Institute, 1996). Prior to GPRA, the focus of evaluation of federal programs was on activities and regulation - now the focus is on outcomes. GPRA holds agencies accountable for producing results, and statutorily links plans and results with budgets. If agencies do not meet stated goals, their ineffectiveness is documented and funding may be cut back or withdrawn. GPRA also requires that members of Congress consult with stakeholders to discover the relative effectiveness of federal agencies and programs. Prior to the enactment of GPRA, agencies would only describe the nature and the purposes of their program and report the output (i.e., the effort) involved in administering their programs. GPRA, however, made an important distinction between output and outcomes, and linked inputs to outcomes rather than to simple outputs (The Congressional Institute, 1996).

Elements of GPRA

Input - The amount of resources that are devoted to a program activity (e.g. dollars assigned/appropriated for job training programs).

Output - The tabulation, calculation, or recording of activity or effort, expressed in a quantitative or qualitative manner (i.e., the number of people trained by the job training program).

Outcome - The assessment of the results of a program activity as compared to its intended purpose (i.e., the number of people trained by the program who found and kept jobs). GPRA requires that outcome efficacy be measured against a set of performance goals through a process of program evaluation.

Performance Goal - A target level of performance expressed as a tangible measurable objective, against which actual achievement will be compared including a goal expressed as a quantitative standard, value, or rate.

Program Evaluation - An assessment made through objective management and systematic analysis of the manner and extent to which programs achieve intended objectives.

The Act requires all federal agencies to provide Congress with the public sector equivalent of a business plan. Just as corporations must submit business plans to banks and other financial interest-holders, agencies must now produce similar documents to be reviewed by agency interest-holders OMB and Congress. Specifically, GPRA requires each agency to submit three distinct products:

- *A strategic plan* covering a period of five years. The first plans were submitted to Congress on September 30, 1997, and are to be updated every three years.
- An *annual performance plan*. The first one was submitted to OMB with the FY 1999 budget request and transmitted to Congress in February 1998. These agency plans formed the basis for a government-wide performance plan, which also was submitted to Congress in February 1998.

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- An *annual report on program performance*. This is to be provided within six months of the end of a fiscal year; the first report was due by March 31, 2000.

GPRA differs from past management reform initiatives in two ways. First, it uses the federal budget as a vehicle to provide visibility and accountability to the process. By requiring that strategic and performance plans be presented in the context of an agency's annual budget submissions, GPRA receives heightened attention and review by executives throughout government.

Second, in contrast to previous reform efforts, which were administrative initiatives, GPRA is the law. Among management reform efforts undertaken in this century, only those that have been grounded in statute have remained in force (The Congressional Institute, 1996).

Title I of the No Child Left Behind Act of 2002

Although the Elementary and Secondary Education Act of 1965 (ESEA) has been amended numerous times, the purpose of the Title I program, a subsection of the ESEA, has remained constant. Title I is designed to close the gap of school achievement between wealthy and underprivileged students, to provide additional resources to schools serving poor children, and to supply equal education and opportunities to all students regardless of socio-economic level (U.S. Department of Education, 2000). Title I, Part A is the largest program in the Elementary and Secondary Education Act and the recent reauthorization lays out an ambitious set of initiatives for schools, some of which extend and expand earlier provisions.

In 1994 the Elementary and Secondary Education Act was revamped and several changes were made (U.S. Department of Education, 2000). The ESEA was renamed Improving America's Schools Act (IASA). The IASA, along with the Goals 2000 Educate America Act, built a standards-driven framework for reform in schools (U.S. Department of Education, 2001). Under this framework Title I required states to create - for all students - challenging content and standards aligned with an assessment and accountability system, for all students.

Title I of IASA established several strategic principles to ensure that its requirements were followed. States were supported in setting high standards for all students and aligning curricula, assessments and accountability between Title I and non-Title I schools. "Upgrading the curriculum, accelerating instruction, and providing teachers with professional development to teach to high standards" will focus schools on teaching and learning (U.S. Department of Education, 2001, p. 2).

New Title I Federal and State Accountability Requirements

Title I of the No Child Left Behind Act has increased requirements for the states, local districts, and schools that focus on assessments and accountability for student performance. Among the new Title 1 requirements are those that call for states to implement annual reading and math testing in grades three through eight, and by 2005 in science. States may continue to select and design their assessments. However, the assessments must be aligned with state academic standards and must describe three levels of achievement; advanced; proficient; and basic. The same standards must be used for all children. Furthermore, the assessments must report achievement at the child level, be comparable year to year, and be based on measurable and widely accepted professional assessment standards.

Assessment results must be disaggregated and reported by state, district, and schools by gender, race/ethnicity, English language proficiency, migrant status, low-income status, and special education status. The goal is to bring every child to proficiency within 12 years. To accomplish this, the Act sets a precise timetable for schools and district improvement (H.R.I., The No Child Left Behind Act, Conference Agreements, http:edworkforce.house.gov/issues/107th/education/nclb/).

Title 1 of NCLB

- Lowers the poverty threshold for schoolwide programs to 40 percent;
- Requires standards and assessments in science;
- Requires states to annually test the proficiency of limited-English proficient students;
- Institutes diagnostic testing for literacy in first grade;
- Specifies that "adequate yearly progress" address the progress of all disadvantaged subgroups;
- Requires all students to be taught by "highly qualified teachers";
- Requires failing schools to offer both school choice and supplemental services, such as tutoring;
- Requires funds to be used to promote "scientific, research-based and effective practice in the classroom";
- Requires districts to report teacher qualifications to parent on request; and
- Adds substantial other new reporting requirements.

(Source: Educating Funding Research Council, January, 2002, p. 9).

A key accountability tool is Adequate Yearly Progress (AYP) that states must define for all local districts and schools. The AYP measure must include the performance of all students and requires that states establish their baseline "based on the higher of the percentage of the students at the proficient level who are in either the lowest achieving group of students, or the school at the 20th percentile in the state"(Educational Funding Research Council, January, 2002b, p. 7).

The AYP must include separate, measurable annual objectives for all public school students and for each of the key groups identified above. The AYP must include graduation rates for secondary school students and at least one other academic indicator. The AYP must include intermediate performance goals in addition to the proficiency "target" set by the state in order to gauge the progress of various groups. The AYP for individual schools, districts, or the state may only be achieved if 95 percent of each subgroup is tested. The Act also specifies consequences for schools that fail to meet prescribed levels of performance (Educational Funding Research Council, January, 2002b).

Title 1 schools that fail to achieve AYP for two consecutive years are placed in corrective action and identified for school improvement and must offer students an option to transfer to another public school, notify parents, develop prescribed school improvement plans, offer specific "supplemental services" from a "provider of choice". The Act defines additional explicit actions that local districts and states must take with individual schools placed in corrective action (Educational Funding Research Council, January, 2002b, p. 7).

The assessment and accountability requirements of the No Child Left Behind Act are accompanied by a number of other new provisions that address teacher quality and funding. The provisions take effect immediately, unless otherwise specified, and represent a more forceful and comprehensive federal role in school accountability.

A. The Current Status of Title I State Accountability Systems

The U.S. Department of Education determines whether a state has met the Title I requirements. The Department conducted peer reviews, involving experts in the fields of standards and assessments to ascertain if states were meeting the 1994 IASA Title I assessment requirements. The peer review did not directly examine a state's assessment, but reviewed materials submitted by each state to provide evidence that it met the requirements. The areas of review included general characteristics of the assessment, alignment with content standards, technical quality, and reporting and use of results for accountability (U.S. Department of Education, No Date). Each state's assessment system was judged to be in one of the following categories: full approval, conditional approval, compliance agreement, timeline waiver, or under review.

B. State Variations in Interpretation.

Title I has the same requirements for all states regarding assessments, standards, performance reporting, and consequences for performance. The general nature of the 1994 requirements resulted in a variety of state-level interpretations, reflecting state demographics, political culture, educational performance, and educational governance structures and policies (Goertz & Duffy, 2000).

A primary intent of Title I of IASA was that each state would develop a rigorous accountability system that would apply equally to Title I and non-Title I students and schools (U.S. Department of Education, 2001). A review of state assessment and accountability systems conducted by the Consortium for Policy Research in Education (Goertz & Duffy, 2001) concluded that many states are still functioning under dual accountability systems with differing standards for Title I and non-Title I schools and different measures of adequate yearly progress. This means that there is considerable annual fluctuation in the percentage of schools identified as "in need of improvement" within any given state (U.S. Department of Education, 2001).

Another major area of state variation related to assessment. Assessment was identified as the foundation of the states' accountability systems. States were to use multiple measures to assess their students. However, what is meant by multiple measures was not precisely defined, which led states to translate this requirement to fit their own needs or existing systems (Goertz & Duffy, 2000). States are using norm-referenced, criterion-referenced, and performance-based tests solely or in combination and some states are using assessments that are not aligned with their challenging content standards or performance standards (U.S. Department of Education, 2001).

Title I of IASA stated that all students were to be held to the same assessment, reporting, and accountability policies. As of January 2001, a total of 20 states had not met the Title I requirements to include students with disabilities or students with IEPs in their assessment and accountability systems (U.S. Department of Education, 2001); states also differed in the way students with limited English proficiency were included. Often, state assessments did not provide valid and comparable measures for students with disabilities or with limited English proficiency (Goertz & Duffy, 2000).

A final concern regarding state interpretation of the 1994 requirements was the lack of states' capacity to support the improvement of low-performing schools. Many states have had to limit the number of schools identified as low performing because funds do not allow for intervention at all the schools in need (Goertz & Duffy, 2000). For example, "California designated 3,144 schools as under-performing in 1999-2000, but included only 860 of these schools in the first two years of its Immediate Intervention/Under-performing Schools Program" (Goertz & Duffy, 2000, p. 39). As noted earlier, the new reauthorization of Title I strengthens both the accountability requirements and support for school improvement. Nonetheless, given the status of the implementation of the previous requirements, a number of states may have a way to go to bring their assessment and accountability system fully into compliance with the new requirements.

5. Special Education Accountability and Indicators

Accountability for special education programs has traditionally differed from general education accountability in at least two major ways. First, the focus in special education has been overwhelmingly on compliance with legal procedures (Elmore & McLaughlin, 1982; Thurlow et al., 2000; U.S. Department of Education, 1998). Second, accountability for student performance or outcomes has been private, through the Individualized Education Program (IEP) review process, as opposed to public through reported aggregate data (McDonnell, McLaughlin, & Morison, 1997; McLaughlin, Henderson & Rhim, 1997). The strong federal focus on accountability through compliance monitoring reflects the civil rights orientation of ensuring equitable access to a free and appropriate public education (FAPE) that drove the creation of a special education system in the U.S. (Danielson & Malouf, 1994; McDonnell et al., 1997).

The National Council on Disability (NCD, 1989) suggested that the focus in special education should shift from access to education to the quality of education and student outcomes. Several years later, a National Research Council (NRC) study examined how students with disabilities were to be included in standards-based reforms (McDonnell et al., 1997). The NRC endorsed two principles regarding students with disabilities and standards-based reform: 1) All students should have access to challenging standards; 2) policymakers and educators should be held publicly accountable for every student's performance.

Special Education Accountability Frameworks

The National Center on Educational Outcomes (NCEO) and the National Association of State Directors of Special Education (NASDSE) have offered models of accountability for special education that include specific indicators. In the early 1990s, NCEO worked with hundreds of stakeholders to develop a conceptual model of educational results and indicators to guide accountability for students with disabilities (Ysseldyke, Krentz, Elliott, Thurlow, Erickson, & Moore, 1998). This framework is also used to design alternate assessment systems and guide IEP planning for students with disabilities, ensuring that individual goals are comprehensive and aligned with state or district standards.

The NASDSE Balanced System of Accountability (NASDSE, 1995) builds on a conceptual framework that assumes a dynamic balance between the following three components: inputs and processes that guarantee educational equity (e.g., IEP, least restrictive environment, procedural safeguards, parent involvement, staffing credentials, finance/funding, and staff development); system results that guarantee program effectiveness (e.g., standards, curriculum, sanctions, and incentives); and individual student learning (e.g., IEP goal attainment, academic and non-academic performance, and continuous monitoring). The value of these NCEO and NASDSE models largely rests with the articulation of key student outcomes and performance indicators that can guide state and local education improvement plans.

New IDEA Accountability Requirements

The 1997 IDEA Amendments contain a number of new provisions that seek to align federal special education policy with general educational accountability reforms. The SEAs must ensure that children with disabilities are included in local and statewide assessments with accommodations where appropriate [Section 612(a)(17)(B)(I)], and report the performance of these children with the same frequency and in the same detail that they use to report non-disabled children performance levels [Section 612(a)(17)(B)(iii)].

States are also required to develop alternate means of assessment for those children who are unable to participate in standard assessments by the year 2000 [Section 612(a)(17)(A)], and the performance of these children must be reported as well [Section 612(a)(17)(B)(iii)]. In addition, IDEA requires states to create performance goals and indicators for children with disabilities that are aligned with the states' established learning standards and desired educational outcomes for all children. According to IDEA, the goals for children with disabilities: (1) are required to be "consistent, to the maximum extent appropriate, with other goals and standards for children established by the state;" (2) must "at a minimum address the performance of children with disabilities on assessments, dropout rates, and graduation rates;" 3) and shall be part of the report "to the Secretary and the public on the progress of the State, and of children with disabilities in the State, toward meeting the goals...." [(Sec. 612 (a)(16)].

By adding these provisions, the law implicitly defines state and local assessments as contributing to a student's educational opportunities, for which access must be guaranteed. Tying progress to local and statewide assessments, with appropriate

accommodations, can ensure that students with disabilities will access the same standards as all other students. The requirement for public reporting of aggregated data is designed to enforce accountability and the educational progress of students with disabilities.

While the IDEA contains the most explicit statements concerning educational accountability, provisions in both Section 504 of the Rehabilitation Act (1973) and the Americans with Disabilities Act (1990) also provide important guarantees related to educational reform.

According to a recent analysis of state education reports conducted by NCEO, 33 states publicly reported data on the participation of students with disabilities in assessments and 37 publicly reported data on the assessment performance of students with disabilities (Thompson & Thurlow, 2001). While these numbers have increased considerably from previous years, still only 13 states reported participation data on students with disabilities for all of the tests for which they reported participation data on other students, and only 19 states reported performance data on students with disabilities for all of the tests for which they reported performance data on other students. See "Reporting on the Performance of Students with Disabilities, www.eppri.org.

While students with disabilities are increasingly being accounted for in general education reports, several efforts within special education have been specifically designed to provide OSEP with information related to how state education agencies, state lead agencies for early intervention, local education agencies, early intervention service providers, and other relevant state agencies are complying with the IDEA federal mandates. These include the annual state reported data, OSEP monitoring activities, and biennial reports.

Annual Report to Congress on the Implementation of IDEA

Since the implementation of P.L. 94-142 (1975), states have been required to annually report data on a variety of program indicators including the number of students receiving special education services, their placements, the number of personnel serving them, and the exit status of those leaving school. Sec. 618 of the IDEA specifies the data reporting requirements of states. The data must include the following items, although the Secretary of Education may request other data related to the implementation of the IDEA. (The items here pertain to Part B or school age students. Data are also required for preschoolers, infants and toddlers.)

- Child Count-the number of students with disabilities receiving special education and related services under IDEA.
- Educational Environments-the extent to which students with disabilities are being served with their non-disabled peers.
- Personnel-the number of personnel employed and contracted to provide special education and related services.
- Exiting-the number of students, ages 14-21, who exit special education during school.
- Discipline-the number of students who are placed in an interim alternative education setting, the acts precipitating those removals, and the number of children who are subject to long-term suspensions or expulsions.
- Other data as required by the secretary- specific data, child count and settings, disaggregated by race and ethnicity.

The annual reports, which have been published since 1978, contain the state-reported data and have been some of the main sources for reporting the nation's progress on implementing the IDEA (U.S. Department of Education, 1998). Some of the data, such as numbers of students served under the IDEA, have been collected since the beginning; other data, such as on suspensions and expulsions, are more recent requirements. In addition to the data, the reports include information from OSEP monitoring activities, and discretionary programs such as research.

Currently, the *Annual Reports to Congress* are divided into four main sections: Context/Environmental, Student Characteristics, School Programs and Services, and Results. Each section contains individual modules on a variety of topics of interest to the special education field, and provides an overview of current issues affecting students with disabilities. Appendices in the reports contain the state data tables.

Significant efforts have been made to create greater unifor-

mity in the data and permit cross-state comparisons. However, much variability exists across states because of differences in state definitions of certain data categories. Generally, the longer a specific data element has been reported, the more stable and consistent the indicator.

OSEP's Monitoring Plan

As the administrative agency responsible for overseeing the implementation of IDEA, OSEP assists state agencies through grants, technical support, policy support, and monitoring oversight. Each SEA is charged with ensuring that local schools implement the federal provisions (as well as individual state requirements). Traditionally, the monitoring process employed by OSEP has focused on determining compliance with various procedures required under the IDEA. These include having a system in place to identify children with disabilities, instituting non-discriminatory assessments, meeting the prescribed time lines for specific procedures, and other processes and activities mandated by federal special education law and regulation.

A. Continuous Improvement Monitoring Process (CIMP)

Since the 1997 reauthorization of IDEA, OSEP has been moving toward outcome- or performance-based monitoring focused more on results than on process. Program administrators from OSEP engaged in discussions with stakeholder groups of parents, teachers, advocates, and representatives of state and local school districts to design a different monitoring process. The collaboration between OSEP and these key stakeholders led to the development of the Continuous Improvement Monitoring Process (CIMP) (OSEP, 2000).

The CIMP has been designed to assess "the impact and effectiveness of State and local efforts to provide early intervention services to infants and toddlers with disabilities and their families, and a free appropriate public education to children and youth with disabilities" (OSEP, 2000, p. 3). It employs a multi-step process engaging a stakeholder committee at the state level to assess critical program needs through the identification of key program indicators.

The first phase consists of a state-level "self-assessment" which is completed by a steering committee of key stakeholders. The committee constructs and employs a self-assessment plan to evaluate how well the state has achieved compliance and improved results for students with disabilities (OSEP, 2000). Self-assessments are organized around five cluster areas for Part B (school-age programs) and Part C (infant and toddlers programs). Part B clusters areas are: parent involvement; free and appropriate public education in the least restrictive environment; secondary transition; early childhood transition; and general supervision. The Part C areas are: family centered services; child find; early intervention services; and general supervision. For each cluster area, there is an overall objective, a component, indicators, and recommended data (Ryder, 2001).

During "validation planning," which follows the assessment phase, the committee and OSEP collaboratively corroborate the self-assessment. Strategies include reviewing collected data and/or collecting additional data, and conducting on- and off-site reviews, public meetings, and interviews.

"Improvement planning" takes place after the steering committee has reviewed its validation results and self-assessment. The committee develops an improvement plan that focuses on compliance with the law and the improvement results for students with disabilities. Improvement methods in the plan must include timelines and benchmarks. Following development of the improvement plan, the strategies are implemented and the results evaluated.

The final phase in the CIMP is "verification and consequences," which is OSEP's verification of the effectiveness of the state's plan based on data and documentation supplied by the state and its steering committee. The state may be rewarded for its successful approaches to complying with IDEA, although it is not clear what rewards are given. States that do not comply, have not implemented mandatory components, or have unsuccessful improvement plans may have to take corrective actions, enter a compliance agreement, or have funds withheld (OSEP, 2000).

B. Focused Monitoring

In November 2000, the cluster areas were reviewed by the stakeholder groups originally involved in developing the CIMP, and further revisions were made. Specifically, the deliberations resulted in a move to "focused monitoring." The key principles

of focused monitoring include defining the following: priority areas; indicators measuring performance in each priority area; benchmarks that compare state data to the state's own baseline performance; and triggers or performance levels that determine whether a state needs further assistance or intervention or has developed a successful practice that can be shared with other states (Ryder, 2001).

Focused monitoring is based on the assumption that there are limited resources available to OSEP and to state education agencies to assist school districts in the implementation of IDEA. Therefore, resources should be allocated where there is the greatest need; resources should not be allocated unless they are sufficient to guarantee the desired outcome. Monitoring should focus on select priorities that are likely to improve student educational performance and increase the independence of children with disabilities. Focused monitoring is also based on the belief that to be effective, monitoring should be limited to a number of priority areas and a number of indicators within each area. The indicators should be verifiable and able to target OSEP's and state resources in the direction of greatest need. At this time, focused monitoring is only a proposal, and key indicators are being discussed and debated.

Requirements Regarding Performance Goals and Indicators

The 1997 IDEA amendments contained a new requirement that states establish performance goals and indicators for students with disabilities and report to the public on progress made toward meeting these goals. States report in a *"Biennial Performance Report for Part B (of IDEA)."* The first reports were submitted on December 31, 1999.

Each state was required to provide the following information about its performance goals and indicators: "State the goals the State has established for the performance of children with disabilities in the State and the extent to which those goals are consistent with other goals and standards for non-disabled children established by the State." Also, "State the performance indicators that the State will use to assess progress towards achieving those goals that, at a minimum, address the performance of children with disabilities on assessments, drop-out rates, and graduation rates" (Ahearn, 2001, p. 1).

A review of the first Biennial Performance Reports revealed significant variation across states. For instance, states' special education performance goals and indicators are at very different stages of development. Ten of the reports were found to be incomplete while others were very detailed. Some states had specific indicators listed with broad goals and vice versa. What one state may have distinguished as an indicator, another state may have identified as a goal (Ahearn, 2001).

About one-third of the states applied the same set of goals to students in special education as in general education, while the remaining states had separate sets of goals for each group. The most common goals, among all states, addressed improving academic achievement. Other goals, in order of frequency, addressed transition or postsecondary placements, teacher preparation and technical assistance, graduation rates, dropout rates, and communication or coordination with families and community (Ahearn, 2001).

Variations in state performance indicators mirrored variations in state goals. What were goals in one state were indicators in the next. The number of indicators reported by states ranged from 5 to 71, and were clustered in the following eight major areas: graduation standards; inclusion in general education curriculum and/or assessments; improvement of dropout rates; raising academic achievement; improving transition and post-school plans; decrease of suspension and expulsion rates; higher quality of service for teachers and other personnel; and greater communication and coordination with families (Ahearn, 2001).

Summary

The previous sections have overviewed some of the considerations in creating indicator systems, particularly those that are to be used as part of accountability systems. Additionally, examples were presented of current federal-level approaches to program accountability that use a variety of performance indicators. Several key conclusions should be drawn from the overview. First, it is important to restate that creating an indicator system does not directly lead to accountability. Indicators can have multiple uses, one of which is accountability. Indicators can and should be able to be used to monitor program improvement and identify "hot spots" of underperformance. However, the purpose and use of a specific indicator or group of indicators should be defined first, then indicators selected. Simply using data that are available or convenient may not serve the purpose of the indicator system.

A second consideration concerns building an indicator "system" that has a linkage between individual indicators. Ideally only data that has a direct linkage to a specific outcome, such as student performance, should be collected as part of an indicator system. However, given the difficulties in measuring educational processes and the weak relationships between some of the more reliably measured indicators and student progress, this may be a challenge. Nonetheless, simply collecting and reporting an assortment of statistics can lead to random acts of improvement.

Related to the notion of building a system of indicators is the idea of having vertical alignment within the system. Federal level data, in most instances, is reported up from school, district, and/or state. Thus, consideration should be given to building a system of individual statistics or data elements that have use and meaning at the level at which they are reported as well as up through the system. That is not to say that the only indicators should be those reported to the state or federal levels. It does argue for alignment so that federal and state-level decisions or actions have some probability of impacting at the specific point in the system that needs to be remedied.

Last, but certainly not least, an indicator system should be "parsimonious" and the data elements used as indicators should be chosen with care. In addition, efforts should be made to ensure that the data is of the best quality possible. In the following section we discuss in detail how to think about creating an indicator system and choosing specific indicators.

Table 1. Status of Core States' Performance Goals and Indicators (as of 11/2000)

State is California		State is Maryland	
Goals	**Indicators**	**Goals**	**Indicators**
1. Unique needs of students are to be accurately identified.	1. Percent of students participating in the assessment program.	1. Expand opportunities for students with disabilities to participate in the general education curriculum and school reform.	1. Average scores for students with disabilities will improve by 1.5% annually.
2. Have fully qualified personnel.	2. Percent of students over the fiftieth percentile in assessments.	2. Increase the inclusion of students with disabilities in measures of school and student performance.	2. The percent of time students with disabilities spend in regular education will increase by 2% per year.
3. Integration.	3. Average reading scores at fourth grade.	3. Enhance partnerships.	3. Percent of students with disabilities who receive a high school diploma will increase by 2% annually.
4. Have high academic standards.	4. Percent of students who drop-out during or after eighth grade.	4. Strengthen the professional work force requirements.	4. Increase post high school employment by 2% per year.
5. Prepare students with disabilities for work and independence.	5. Percent of special education students returned to general education.	5. Coordination improvement.	5. No students will be exempted from assessments by 2001.
	6. Percent of twelfth grade students who graduate.	6. Support system change activities, coordinate research, personnel preparation, technical assistance, and media changes.	6. Percent of students with disabilities who are expelled, suspended, and/or highly challenging behavior will decrease by 10% per year.
	7. Four measures of ethnic disproportion.		7. Decrease the placement of students with disabilities in alternate environments because of challenging behavior by 10% per year.
	8.Percent of qualified personnel.		8. Increase students' with disabilities attendance rates by 2% per year.
	9. Percent of students expelled.		9. Decrease dropout rate of students with disabilities by 0.5% per year.

Table 1. Status of Core States' Performance Goals and Indicators (as of 11/2000)

State is New York		State is Texas	
Goals	**Indicators**	**Goals**	**Indicators**
(Same goals for ALL students)	1. Increase the percent of students with disabilities in state assessments to 95%.	(Same as State goals for ALL students)	(Same as State Indicators)
1. All are to meet high academic standards and behaviors.	2. Decrease the percentage of dropouts.	1. Exemplary performance in reading and writing.	1. Results on assessments.
2. Regents standards are to be met by all schools.	3. Have 80% of students with disabilities who complete their secondary education receive a diploma.	2. Exemplary performance in understanding of mathematics.	2. Dropout rates.
3. All personnel must be qualified and current.	4. No more than 20% of students with disabilities receive an IEP diploma or local certification.	3. Exemplary performance in understanding of science.	3. Attendance rates.
4. All education and resources must be accessible to everyone.	5. Resources are to be used in public interest.	4. Exemplary performance in understanding of social studies.	4. Percent of students who pass tests per grade.
6. Work environment must meet high standards.			

Note. From Ahearn, E. (2001). Performance Goals and Indicators. Washington D.C.: National Association of State Directors of Special Education. Adapted with permission of the author.

6. Issues in Creating Special Education Indicators

The overarching purpose of an education indicator system is to permit refined and balanced judgments about the quality of education and, to the extent possible, a better understanding of the relationships between actions by policy makers and changes in that quality....The mere publication, however, of a single indicator or collection of indicators is generally insufficient to describe or explain the condition of something as complex as an educational system (Goertz, 1989, p. 3).

There has been a tendency to use budding state indicator systems to hold local school systems, schools, and school staff accountable for results before the system has the capability for adequately doing so (Goertz, King, Coley, & Kaagan, 1989, cited in Goertz, 1989, p.3).

In this section we lay out some of the basic steps in developing special education indicator systems and performance goals.

Steps to Creating A Special Education Indicator System

There is no absence of special education data, at least at the state and federal levels. The difficulties facing special education policy makers lie in making sense of the existing data and determining which data can be used as indicators. A special education indicator system is an organized set of statistics the can inform policymakers, administrators, parents, and other stakeholders about key aspects of the special education system. Defining an indicator is more than simply choosing a statistic. While we may cherish certain statistics or "data", we must also understand what the statistic "indicates." In considering how to select indicators, there are several important considerations.

First, we must think carefully about the overall purpose of the indicator system. Then we must consider how the properties of the data match the decisions to be made. Of course, all of these decisions are balanced with issues of cost and efficiency.

A. Purpose of the Indicator Systems

One use of indicators is simply to describe some component of special education (e.g., performance of students with disabilities, quality of personnel, extent of use of certain settings). The data can also be used to analyze the relationships among components (e.g., does student performance differ by setting or teacher qualification?). Ideally, a special education indicator system should be both descriptive and analytical. However, one that is purely descriptive is only useful if it promotes further investigation or systematic analyses. Further, to be useful, an indicator should be trackable over time and reveal trends.

The definition of an indicator system's purpose is entangled with the kinds of decisions that will be made based on the data. The decisions, in turn, are related to the level at which actions will be taken.

Table 2 contains examples of how data are used at federal, state and local levels and considerations for choosing indicators.

Federal-Level Purposes	Considerations
Describe status of national implementation of IDEA.	Implementation data must be nationally representative and/or comparable across states. The data may need to be reliable over time to monitor trends. However, point in time data may be adequate. Many of the key implementation variables are procedures or processes which are much more difficult to operationalize in a reliable, quantifiable manner. Data are primarily descriptive.
Describe state and national performance of students with disabilities on state assessments as required by law.	Performance data must reportable in the aggregate and improvements tracked over time. However, state variability in assessments requires the creation of some measure of a national baseline and a uniform measure of improvement (i.e., gaps between general and special populations).
Describe mandated state-level data such as drop out and graduation rates, and racial/ethnic disproportionality in special education	Data must be comparable. They must also be reliable over time to indicate trends.
Monitor state compliance with IDEA requirements and determine sanctions and corrective actions.	Validity of the data and comparability are very important. Data must be comparable to a national referent group and/or to an individual state baseline.
Assist states in implementing IDEA and design technical assistance and support.	Data collected for monitoring must relate to specific inputs or processes that are amenable to capacity building.

State-Level Purposes	Considerations
Provide technical assistance and capacity building strategies and develop discretionary grant programs and statewide initiatives.	Data on inputs, processes, outcomes, and other contextual variables are needed to permit analyses of interrelationships. Data should be valid indicators of specific variables that are responsive to change
Monitor status of local school districts' implementation of IDEA and impose sanctions and/or corrective actions.	Data must be valid and comparable across districts and schools. Data must have sufficient stability to permit some tracking of status and improved or decreased performance over time. Contextual data such as demographics and key inputs are required.

District-Level Purposes	Considerations
Allocate staff and other resources.	Data on inputs, context, and outcomes must be disaggregated and analyzed by key student and program characteristics. Decisions will focus on improving the learning conditions for special education students in schools and classrooms; therefore, data must be collected at level of the student and be sensitive to small changes.
Monitor the implementation of key legal state and federal mandates.	Data must be disaggregated at lowest level (school, classroom, student); must be timely (e.g., able to correct problems and allocate technical assistance and capacity-building strategies).
Ensure implementation of IEPs.	Data on individual student performance and outcomes are required and analyzed by classroom, service delivery model, or program type.

Table 2. Considerations for Choosing Indicators Based on Use

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B. Choosing Indicators

Indicators may likely differ depending on the stakes or consequences of decisions (e.g., resource allocation, capacity building, corrective action) and the level (student, school, district, state, or federal) at which they are made (see Figure 2). Clearly, indicators reported to the federal level may not need the same properties as an indicator that might be used by a special education director to identify "hot spots" of poor performance in schools. Also, if consequences are attached to the data, such as further investigation or sanctions, the stakes increase and the properties of the indicator become even more critical.

Indicators may focus on key outcomes and processes. However, data on context and inputs are also necessary to permit investigation.

Key questions that must be considered in selecting indicators are: is the indicator representative of the specific element of interest and not confounded by other elements; how stable is the indicator over time; can the indicators be aggregated up and compared across schools, school districts, or states and "benchmarked" to other similar data (e.g., general education, other states, or agencies).

C. Understanding "Validity" of Indicators

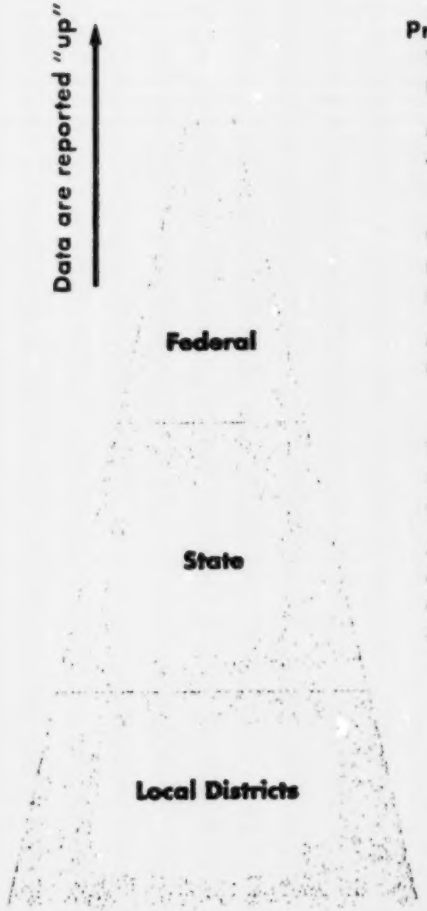
During the last two decades, as our understanding of educational measurement technology has evolved, so too have our notions of validity. Our understanding has moved beyond the narrow conception that validity rests in a particular measurement tool. It is now generally understood that validity requires an evidential basis for making judgements or decisions (Messick, 1989). Tests are not valid or invalid per se; rather it is the inferences that are made on the basis of data obtained from a test that are valid or invalid.

This conception of validity is particularly relevant when considering the properties of indicators. By definition, indicators are used to make judgments and decisions. However, decisions may depend more on the context in which they are made than on the properties of the indicators.

Validity involves the interpretation of information in a particular context. An indicator that supports the validity of one decision would not represent an adequate evidentiary basis for all similar or related inferences. For example, data that show a high rate of participation of students with disabilities in a statewide assessment program would not necessarily support the inference that students on IEPs are making progress in the general education curriculum. On the other hand, some forms of data can be used effectively in multiple contexts to support various decisions. Scores obtained from nationally-normed achievement tests may be used to support decisions in the classroom (e.g., develop reading groups), the district (select reading curriculum materials), and on the state level (allocate funds to districts with low reading scores).

Establishing validity involves two types of evidence: data that lend credence to the inference being made, and an absence of data to support competing or alternative hypotheses. Information from multiple sources must converge on the conclusion that the decision or course of action is valid. Validity is a relative, rather than absolute entity.

Ideally, the higher the stakes associated with an indicator, the stronger the body of evidence needed to validate decisions made on the basis of the indicator. For example, decisions based solely on test scores would be suspect in the absence of key information about participation rates, opportunities to learn, or resources, as well as other outcome or performance data.



Process

What would Congress need to know to improve the participation of students with disabilities in general education?

Percent time in general education settings x disability x race/ethnicity x state

What would a State Director of Special Education need to know to improve the participation of students with disabilities in general education?

Percent time in general education settings x disability, race/ethnicity, gender x LEA x key demographic variables

What would a Local Special Education Director need to know to improve the participation of students with disabilities in general education?

Percent time in general education classes and programs x disability, race/ethnicity x gender x age/grade x type of general education class/program (honors, AP, magnet, etc.) x school

Outcome

What would Congress need to know to improve graduation rates among students with disabilities?

Aggregate graduation ratesGraduation rates and general/special education gaps x state

What would a State Director of Special Education need to know to improve the graduation rates among students with disabilities?

Aggregate graduation rates compared to non-disabled students and disaggregated x disabilityPercent time in general education classes and programs x disability, race/ethnicity x gender x age/grade x type of general education class/program (honors, AP, magnet, etc.) x school x other key demographics

What would a Local Special Education Director need to know to improve graduation rates among students with disabilities?

Aggregate graduation rates compared to non-disabled students and disaggregated x disability;Percent time in general education classes and programs x disability, race/ethnicity x gender x age/grade x type of general education class/program (honors, AP, magnet, etc.) x school

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Figure 2: Choosing Federal, State, and local Indicators

D. Guidelines for Selecting Indicators That Support Valid Decisions

The following are considerations for selecting indicators that support valid decision-making:

- All information is not of equal value. Indicators should be selected on the basis of their relevance to the specific decisions being made. Collecting better information is more desirable than simply collecting more information.

- To the extent possible, indicators should be selected that directly relate to the decisions being made. The lower the level of inference required to interpret data associated with an indicator, the more likely it will support valid decisions.

- Decisions are likely to be more valid when they are based on multiple sources and types of information that converge.

- Indicators that lack stability (over time, across groups, across settings, etc.) are of limited use for valid decision-making.

- Information has different meanings and value at different levels. For example, classroom teachers may attach different meaning to a particular piece of information than would a district administrator or representative of an SEA. Therefore, indicators must be selected on the basis of the level of decision-making they will support. Particular care must be exercised when data collected in the context of one level are aggregated or disaggregated for decision-making at another level.

- Information loses value over time. To the extent possible, indicators should be selected that provide information in "real time" to the decision-makers who will be using it so that improvements can be made in a timely manner.

E. Efficiency of Data Collection

The concept of efficiency refers to increasing an impact or outcome without increasing the level of required resources, or maintaining a level of outcome while using a lower level of resources (Hill, Pierce, & Guthrie, 1997). With respect to selecting indicators, efficiency is an important concept. The costs of collecting and analyzing data associated with an indicator must be weighed against the extent to which the indicator leads to more valid decision-making. Two potential problems can arise. As a hedge against making poor or unpopular decisions, policymakers may err on the side of collecting more information than is necessary. Or if a statistic is not particularly informative and requires extensive "digging" and further data collection, efficiency is lost.

As data elements are added to the decision process, more resources must be allocated and teachers and parents may believe there is "too much testing," or district or state-level administrators may perceive "too much monitoring." As a result, policy- makers may try to make decisions on the basis of too little or bad information. Collection of more pertinent information may appear to be too expensive or difficult, so the policy-makers use information that is readily available. Unfortunately, the data may actually provide minimal support for the decisions, particularly for high stakes decisions.

Collecting data that has limited use is not only inefficient; there is limited motivation to ensure the quality of the data. On the other hand, minimizing cost factors for data that have limited value is also inefficient.

Certain factors can create more efficiency in the indicator system:

- Valid and reliable data are needed for valid decision-making. They may cost more to collect, particularly initially, but will likely have more impact because they lead to meaningful changes.

- Removing redundancies in data collection creates a more efficient system. Using data collected by the system and/or for another program, such as Title 1, and then disaggregating students with disabilities is more efficient than collecting new data or creating new variables.

- Data collection should be coordinated both horizontally, across various programs and offices, and vertically, from school to district to state. This may contribute to redundant data collection, but is still increasingly important as different educational programs move toward performance-based accountability and data-driven decision making. As more data are required, there is greater need for a coordinated

indicator system and data collection efforts. To the extent that federal indicators are useful at state and local levels, there will be greater efficiency and accuracy in the system.

- Standardizing the operational definitions of specific indicators is important for comparability and coordination and can lead to data collection forms and reports that are useful at each level of the special education system.

- Finally, all those who will use the indicators for decision making should value them. A statistic must have meaning and use, or those responsible for collecting and reporting will have little incentive to collect and record accurately.

Since the vast majority of special education data must be collected at the school and/or local district level, the most critical indicators need to be meaningful at those levels. To achieve this, the indicator system should not be developed in isolation of local needs, nor represent data "silos" with each program collecting and reporting its own isolated data sets. Only when the system has alignment and coordination will data collection be efficient and meaningful.

Conclusions: Putting It All Together

Blank (1993) and Goertz (1989) have suggested ways of designing educational indicator systems. Their process is reflected in the following key decisions and actions useful for special education policy-makers and administrators:

- Develop a conceptual framework based on a clear purpose. Is the intent of the indicator system to measure some educational phenomenon or to compare educational phenomena in different school districts or states?

- Identify the phenomenon of interest. What are the important features of the educational system that might be captured?

- Align indicators with key goals of the program and align the indicator system with other data collection efforts if possible.

- Obtain commitment and co-operation of leaders: does the political climate of the state or district create a conducive environment for the indicator system?

- Involve policy makers, educators, researchers, and data managers in selecting data.

- Be parsimonious. Select a limited number of indicators and minimize complexity in reporting.

- Be clear about measurement levels. At what levels should data be collected (federal, state, local)? How can comparability be assured with data collected by different agencies with different collection instruments and varying data definitions? How can quality control be maintained?

- Decide up front how and to whom reports will be made.

This review has covered the theoretical and practical aspects of creating indicators in special education. We also recognize that there are a number of elements that need to come together to achieve the indicators we propose. However, the benefits of such an efficient and aligned system of data collection merit serious consideration. Further, the current climate of enhanced performance-based accountability should provide the impetus for its development.

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